NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

CONNECTICUT

WASTE UTILIZATION

(Ac.)

CODE 633

DEFINITION

Using organic wastes from agricultural operations (such as manure, silage leachate, process wastewater or other organic residues) or other inorganic soil amendments in an environmentally sound manner.

PURPOSES

- Treat organic wastes from agricultural operations through land application.
- Utilize manure, organic wastes, or other organic by-products (such as compost) as a source of nutrients.
- Utilize inorganic by-products (such as water treatment residuals) as a soil amendment.

CONDITIONS WHERE PRACTICE APPLIES

Where agricultural wastes, including animal manure and contaminated water from livestock and poultry operations; agricultural processing residues; or water treatment residuals from municipal treatment plants are utilized.

On agricultural land, this practice applies when waste utilization is a component of a conservation management system.

On animal feeding operations (AFOs) or concentrated animal feeding operations (CAFOs), this practice applies when waste utilization is a component of a comprehensive nutrient management plan (CNMP).

On agricultural land where manure is utilized as a source of nutrients, this practice applies where there is documentation that there is or will be an adequate land base to maintain or achieve the agronomic critical range for phosphorus.

CRITERIA

General Criteria Applicable to All Purposes

Laws and Regulations. All Federal, state, and local laws, rules, and regulations, including local inland wetland agency regulations, governing the implementation of this practice shall be followed.

Waste utilization plans shall be developed in accordance with the following policy requirements:

- NRCS General Manual, Title 450 (Technical Guides, Policy and Responsibilities), Part 401.03,
- NRCS GM Title 190, Ecological Sciences, Part 402 (Nutrient Management Policy),
- Technical requirements of the NRCS Field Office Technical Guide (FOTG),
- Procedures contained in the current NRCS National Planning Procedures Handbook (NPPH), including Part 600.5, Comprehensive Nutrient Management Planning Technical Guidance,
- NRCS National Agronomy Manual (NAM) Section 503.

Land application of wastes shall be accordance with recommendations developed by the University of Connecticut, Soil Test Lab (UConn) or other University of Connecticut sources.

Where agricultural wastes are applied on land not owned or controlled by the producer, the CNMP or waste management plan, as a minimum, shall document the amount of waste to be transferred and the party (person) responsible for implementing the waste utilization plan.

Records of plan implementation shall be kept for a minimum of ten years as discussed in the **OPERATION AND MAINTENANCE** section.

Agricultural wastes shall be utilized in a manner that minimizes the risk of contamination of surface and/or ground water supplies.

Erosion, runoff, and water management controls including filter strips and/or buffers shall be installed in accordance with the overall conservation management system or CNMP on fields that receive organic wastes or nutrients.

Priority areas for land application of wastes should be on gentle slopes located as far as possible from wetlands, watercourses, and other environmentally sensitive areas

Establish filter strips and/or buffers between fields and environmentally sensitive areas, such as, wetlands, watercourses, wells, gullies, ditches, surface inlets, concentrated flow paths, or areas with rapidly permeable soils or aquifer protection areas.

When annual crops are not present on cultivated land, waste applications shall be incorporated within 24 hours.

When annual crops are present, waste applications shall be incorporated by cultivation or injection, if possible.

Wastes on pastures and hayland shall be applied soon after cutting or grazing and before significant re-growth has occurred.

Specifications for waste applications on other land shall be developed on a case by case basis.

Agricultural wastes utilized as sources of nutrients shall not be applied during periods when flooding, frozen, snow-covered, or saturated soil conditions can reasonably be expected (typically November through March), or when the potential for surface runoff, soil compaction, and/or creation of ruts is high or when weather forecasts indicate that these conditions are likely. Other agricultural wastes may be land-applied during periods specified in the plan if a detailed risk assessment indicates a minimal risk to the environment.

Applications of wastes to fields with soils in flooding frequency classes “occasional”, “frequent”, or “very frequent” shall be by injection or limited to periods within 24 hours of tillage and/or planting operations.

Flooding frequency classes are defined in Section 618.26(b)(1) of the current NRCS National Soil Survey Handbook (Part 618, GM Title 430-VI-NSSH, 1999).

Waste applications accomplished using an irrigation system shall be applied in accordance with the requirements of the current Connecticut Standard 449, Irrigation Water Management.

The application rate in inches per hour (in/hr) of wastes applied through irrigation systems shall not exceed the soil intake/infiltration rates (typically 2 in/hr). The total application shall not exceed the field capacity of the soil and in no case shall application result in runoff.

Use of agricultural wastes for energy production may be an integral part of the CNMP or waste utilization plan.

All energy producing components of the system shall be included or referenced in the waste utilization plan.

Provisions for utilization of residues of energy production shall be in accordance with the land application criteria listed above.

Additional Criteria for Treating High Strength Organic Wastes from Agricultural Operations

Where land application is used to treat high strength (biochemical oxygen demand or BOD_5) wastes such as silage leachate or milkroom wash water, the practice shall be in accordance with the current Connecticut NRCS Standards 765, Silage Leachate Collection and Transfer or 635, Waste Treatment.

Additional Criteria for Using Manure, Agricultural Wastes, or Other Organic By-Products as a Source of Nutrients or as a Soil Amendment

Where agricultural wastes are utilized to provide nutrients for crop, forage, fiber production, and forest products, the practice shall also be in accordance with the current Connecticut NRCS Standard 590, Nutrient Management.

Additional Criteria for Using Other Inorganic Soil Amendments

All inorganic soil amendments shall be tested by and recommendations on use and application rates obtained from the University of Connecticut, Soil Test Lab (UConn) or from a laboratory whose criteria are recognized by UConn.

Additional Criteria to Protect Air Quality

Incorporate surface applications of solid forms of manure or other organic by-products into the soil within 24 hours of application to minimize emissions and to reduce odors**.**

When applying liquid forms of manure with irrigation equipment select application conditions where there is high humidity, little/no wind blowing, a forthcoming rainfall event and/or other conditions that will minimize volatilization losses into the atmosphere. The basis for applying manure under these conditions shall be documented in the nutrient management plan.

Handle and apply poultry litter or other dry types of animal manure or other organic by-products when weather conditions are calm and there is less potential for blowing and emission of particulates in the atmosphere. The basis for applying manure under these conditions shall be documented in the nutrient management plan.

When sub-surface applied using an injection system, waste shall be placed at a depth and applied at a rate that minimizes leaks onto the soil surface, while minimizing disturbance to the soil surface and plant community.

All materials shall be handled in a manner to minimize the generation of particulate matter, odors and greenhouse gases.

CONSIDERATIONS

Apply wastes in such a manner so as not to degrade soil quality (the soil's physical structure, chemical properties, and/or biological condition).

Wastes on pastures and hayland shall be applied soon after cutting or grazing and before significant re-growth has occurred.

Specifications for waste applications on other land shall be developed on a case by case basis.

Consider practices and procedures that minimize odor from land-applied wastes. Apply wastes at times when temperatures are cool and when wind direction is away from neighbors.

If odors are a concern, conduct a microclimate assessment to determine when weather conditions are unfavorable for waste application.

Assume that pathogens, other infectious agents, antibiotics, heavy metals, hormones, and other potentially toxic compounds are present in agricultural wastes, especially manures and organic by-products. Evaluate concerns and use appropriate techniques to minimize risks.

Utilize all wastes in a manner that minimizes the risk of soil contamination and/or losses to surface or groundwater resources by implementing additional practices described below.

Examples of additional practices that improve soil quality, minimize the potential for offsite transport, and protect water quality are Connecticut NRCS Standards for:

- Conservation Cover (327)
- Grassed Waterway (412)
- Contour Buffer Strips (332)
- Filter Strip (393)
- Irrigation Water Management (449)
- Riparian Forest Buffer (391)
- Conservation Crop Rotation (328)
- Cover Crop (340)
- Residue Management (329A, or 329B, or 344)

Consider the potential to affect National Register listed or eligible cultural resources.

PLANS AND SPECIFICATIONS

Plans and specifications for Waste Utilization shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose. The waste utilization plan shall account for the use or other disposal of all animal wastes produced, and all waste application areas shall be clearly indicated on a plan map.

The waste utilization plan may be a component of an overall conservation plan or CNMP.

The plan objective shall be to recycle organic waste from agricultural operations through land application.

The application method(s) (hauling or pumping) shall be specified.

Application management shall specify objectives, rates and quantities, timing of land application and incorporation, control of odors and record keeping.

Consider the net effect of waste utilization on greenhouse gas emissions and carbon sequestration.

OPERATION AND MAINTENANCE

Records shall be kept for a period of ten years or longer, and include when appropriate:

- A map showing the location of land application sites
- Quantity and characterization of manure, other organic agricultural wastes, and/or inorganic amendments
- Soil test results
- Dates and amounts of wastes or amendments applied to land
- Dates and amounts of waste removed from the system due to feeding, energy production, or export from the operation
- Waste application methods
- Describe climatic conditions during waste application such as: time of day, temperature, humidity, wind speed, wind direction and other factors as necessary.
- Crops grown and yields (both yield goals and measured yield)
- Other tests, such as determining the nutrient content of the harvested product
- Calibration of application equipment.

The operation and maintenance plan shall include the dates of periodic inspections and maintenance of equipment and facilities used in waste utilization. The plan should include what is to be inspected or maintained, and a general time frame for making necessary repairs.

REFERENCES

USDA-NRCS, National Engineering Handbook (210 VI), part 651, Rev 1, Agricultural Waste Management Field Handbook, April 1992 or as amended.